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DEPT. OF MICROBIOLOGY

A SHORT HISTORY OF THE
DEPARTMENT OF BACTER-
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University of Illinois, Urbana, Illinois



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A SHORT HISTORY OF THE DEPARTMENT OF BACTERIOLOGY

University of Illinois, Urbana, Illinois
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A history of bacteriology on the Illinois campus begins essentially with the work of Professor Thomas J. Burrill. Professor Burrill was appointed by the Board of Trustees as Assistant Professor of Natural History and Botany on November 18, 1868. A few years later the appointment was changed to Professor of Botany and Horticulture. During his academic career he held many administrative positions but throughout all this period maintained his active interest in research and teaching. During the early part of his career his name was listed as the teacher in many of the courses offered. However, he appeared to be intently interested in the smaller forms of plant life. Undoubtedly, it was this interest that established him as a pioneer in the development of bacteriology in this country.

The first work in microbiology was offered in the Department of Botany by Professor Burrill. As early as 1871-72 a second-year course in botany included a study of those plants "causing injury and disease, as the Fungi." Five years later (1876-77) the study of "Microscopy and Fungology" was introduced. This course was devoted mainly to the "minute fungi, including those of the different fermentations and putrefactions." Further description indicated that these fungi were "studied as carefully and thoroughly as circumstances permitted, cultures being made for the purpose and specimens obtained from various sources."

Professor Burrill's research work is well documented in his publications. In the Transactions of the Illinois State Horticulture Society (1877

and 1878) he reported observations on diseased conditions in plants which he suspected to be of bacterial origin. Two years later (1880) his work on fire blight of pears and twig blight of apples was reported in the Proceedings of the American Association for the Advancement of Science. In this report Professor Burrill indicated the cause to be a bacterium. This discovery proved a relationship between bacteria and certain types of plant disease.

In 1886 general biology was added to the courses listed in botany. In this course, work on the "culture of Bacteria" was included.

The first complete course in bacteriology appeared in the first semester 1891. It was given by Professor Burrill and could rightfully be considered the beginning of bacteriology at the University of Illinois campus and in the country. The catalogue description of the course is particularly interesting in its classic durability, and reflects the remarkable insight possessed by Professor Burrill. The last sentence is especially applicable to study in this field today. "Bacteria and allied organisms are now known to play exceedingly important roles in nature and in daily life and well being of man. This course is an introduction to existing knowledge upon the subject, and offers instruction in the modern methods of experimentation and research. The laboratory is well equipped for a limited number of students. Only those who can give extra time when occasion demands should undertake the work." Soon after this course was introduced some students in sanitary engineering were allowed to take the work as a two-fifth course in the winter term. In 1893 bacteriology for municipal and sanitary engineers was offered in addition to the general course mentioned above. Work in identifying, classifying, and cultivating organisms and in water analysis was given over a period of seven weeks.

The first graduate course offered in bacteriology was introduced by Professor Burrill in 1896. He described the work — "Investigation upon morphological and physiologic variation due to treatment; systematic studies upon the number, validity, and relationships of species; researches upon special saprophytic or parasitic kinds of bacteria and upon methods of favoring or combating their activities."

Around 1899-1900 courses in bacteriology appeared in departments other than botany. Soil bacteriology and dairy bacteriology were introduced by the College of Agriculture, thus dividing the courses between the two colleges. Later, work in animal diseases was also offered.

In 1903 Professor Burrill added to the botany curriculum a new course entitled "Lectures and Demonstrations upon Bacteria." It appears

that this course was intended as a contribution to general education since a footnote in the register indicates that "this course cannot be counted for the degree of A.B. in the College of Literature and Arts." The offerings were further augmented in 1908 by a course described as "A detailed study of selected species of bacteria or investigations upon assigned subjects."

Bacteriology as a subject separate from botany was first listed in the University catalogue in the fall of 1909. However, no courses were listed under this subject. Instead a notation to "See Botany" was given.

About this same time (1908-09) two new courses were added to the graduate offerings in botany. Both courses were crosslisted under animal husbandry and were taught by Dr. W. J. MacNeal, who had been appointed specifically for the purpose of introducing work on pathogenic bacteriology. The first course had as its description "Special methods, intended to develop technical skill introductory to research upon pathogenic bacteria." The second dealt with "Investigations upon micro-organisms related to the animal body in health and disease."

Professor Burrill retired after the school term in 1911-12. Professor Otto Rahn then assumed responsibilities of teaching bacteriology. Professor Rahn's teaching load was heavy by modern standards, and included a general course, the course for sanitary engineers, a course described as investigations on special groups, and one graduate course in bacteriology. During Professor Rahn's second year he introduced a course listed as "Applied Bacteriology," which included a study of "decay of organic matter in nature, soil and sewage bacteriology, food bacteriology, water bacteriology, pathogenic bacteriology: identification of organisms." During the summer of 1914 Professor Rahn returned to Germany. During his visit World War I broke out and he was forced to remain in Germany until after the war. The same events required a visiting German, Professor Felix Löhnis, to remain at the University of Illinois, where at this time he did much of his work on bacterial life cycles.

In 1914-15 the University catalogue listed for the first time the courses offered in bacteriology under the heading "Bacteriology." Dr. Joel A. Sperry, II, who had been an instructor under Professor Rahn, was placed in charge of bacteriology. He was assigned two assistants, since the number of courses had been increased. In addition to general bacteriology and applied bacteriology, courses in pathological bacteriology and epidemiology and a "Journal Meeting in Bacteriology" were offered at the undergraduate level, as well as a separate general bacteriology for

advanced students and graduate students not majoring in bacteriology. Three graduate courses were offered, including graduate research.

By the time the register for 1918-19 was published, bacteriology was listed in the catalogue with the notation "A division of the Department of Botany." Prior to this time no major was offered in bacteriology. Dr. Sperry left the University during the summer of 1918, and was succeeded by Dr. F. W. Tanner. The staff at this time consisted of one assistant in addition to Professor Tanner. The courses offered were the same as those taught by Professor Sperry.

In 1921 bacteriology was given the status of a department headed by Dr. F. W. Tanner, who, with two assistants, carried both the teaching and research responsibilities. The department began its long and increasingly vigorous life on the third floor of Noyes Laboratory. The quarters consisted of a teaching laboratory, research laboratory, storeroom, office space, and a service room for washing and sterilizing glassware, preparing media, and other necessities. A small departmental seminar-library room was also available.

Dr. S. A. Koser was appointed as an assistant professor in 1923 and was the first appointment to the staff above the rank of assistant. Much of Professor Koser's research on the nutritional requirements of bacteria began during this period. He left the department in 1928. Professor Koser was succeeded by a former graduate student in the department, Dr. G. I. Wallace. The increasing interest and enrollment in bacteriology required the appointment of four teaching assistants.

In addition to classwork and research Dr. Tanner and Dr. Wallace performed diagnostic bacteriological work in connection with the State Department of Public Health. Specimens were sent to the department for examination from the twin cities and surrounding towns. Several factors, including increased enrollment, new public health regulations, and larger numbers of diagnostic requests, forced the bacteriology staff to discontinue such service work. A branch of the State Department of Public Health was subsequently established and was housed within the department. W. A. Miller, a graduate student in the department, was given the responsibility for the operation of the branch laboratory. After Mr. Miller's graduation the branch facilities were enlarged but remained in the department until 1939, when new quarters were made available.

In the fall of 1934, Dr. F. M. Clark, a former graduate student in the department, was appointed instructor of bacteriology and in the following year Dr. O. F. Edwards was added to the staff. As the number of students increased, members of the department began to devote more of

their time to special fields in bacteriology. Professor Tanner continued to lecture in the beginning course while Dr. Clark and assistants were responsible for the laboratory sections. Professor Tanner also lectured in food bacteriology, a subject in which he was intensely interested, and to which he devoted the major portion of his research efforts. Dr. Clark assisted in the laboratory. Professor Wallace was in charge of pathogenic bacteriology and gave the course in epidemiology. He also taught the advanced general course for advanced undergraduate and graduate students in bacteriology. Three graduate courses, physiology of bacteria, a current literature seminar, and graduate research, all under Professor Tanner's supervision, made up the graduate program.

In the fall of 1938, Dr. Wickerham joined the staff. Professor Tanner had delegated the responsibility for the elementary course to Dr. F. M. Clark. The staff had grown to five full-time members and five assistants. In the summer of 1940, Dr. Wickerham accepted a position with the Northern Regional Research Laboratory in Peoria and was replaced by Dr. John Garey. The department was becoming overcrowded since the increased enrollment and increase in staff had not been accompanied by proportional growth in space.

During the year 1941-42, Dr. Doris Cook was appointed instructor in the department and two new courses were introduced into the curriculum. Bacteriology for nurses was taught by Professor Wallace and Dr. Garey, and a second course in pathogenic bacteriology given by Dr. Wallace dealt with pathogenic bacteria and laboratory methods of the army. After being given one year the latter course was discontinued. However, in 1945 a course in immunology and serology was introduced and given by Professor Wallace.

During World War II the department cooperated in the training of men for special services in the Armed Forces. This group was sent to the University as a part of the Army Specialized Training Program and was given refresher courses in several subjects. In the Department of Bacteriology they were given a seventh term consisting of twelve weeks of general bacteriology. This was followed by an eighth term which was more specialized and adapted to men who were to serve as officers in the sanitary corps. After completing the work they were detached to the Camp for Officers Training and commissioned in the sanitary corps. These courses were started soon after the war began and continued throughout its duration. Courses for regular students were given at the same time, in a program designed to speed up completion of their work

toward a degree. Under such conditions it is not surprising that facilities and stamina were taxed to the utmost.

Due to the wartime manpower deficiencies, the staff in 1943 consisted of five full-time members and one assistant. Dr. Severens had been added to the staff after Dr. Garey and Dr. Edwards had left the University. With the return of students after the war the staff again regained its normal number with the addition of Dr. C. M. Wilson.

Since the field of bacterial nutrition had been developing very rapidly, a new undergraduate course in bacterial nutrition and vitamin assay was introduced in 1946 by Professor F. M. Clark.

During the 1940-50 decade the departmental course sequence was scrutinized with a view toward improving student contact. Those students who elected to take the beginning course in bacteriology during the first semester of their sophomore year were not eligible to enter advanced courses until they had attained junior standing. To remedy this situation an undergraduate course in advanced general bacteriology was introduced and taught by Professor C. M. Wilson.

In 1948 the State Department of Public Health initiated a Water Works Operators Short Course at the University. This has been an annual cooperative project involving the State Department of Public Health and the University Departments of Bacteriology and Civil Engineering (Division of Sanitary Engineering) and Division of University Extension. The one-week course accommodates twenty to twenty-five water treatment plant operators from various parts of Illinois. The course is designed to acquaint these men with basic methodology and recent advances in the treatment and analysis of public water supplies.

In the fall of 1948 Professor Tanner was forced to leave the University because of illness and in the following year Professor G. I. Wallace was named Acting Head of the Department of Bacteriology. The departmental staff at this time consisted of four full-time staff members and eleven assistants.

Professor H. O. Halvorson was appointed head of the Bacteriology Department in the fall of 1950. He brought into the department Professor Sol Spiegelman and Professor A. F. Borg. The following year Professor I. C. Gunsalus and Professor S. E. Luria were added to the staff.

With the addition of these members to the staff new courses were introduced into both the undergraduate and graduate curricula. At the undergraduate level courses in the "Principles of Experimental Bacteriology" and "Viruses" appear in the catalogue. From the birth of the department in 1921, the graduate offerings had been confined to physiol-

ogy of bacteria, a current literature course, and research. With the increased staff it was possible to greatly enlarge the offerings at the graduate level. "Quantitative Analysis of Bacteriological Procedures" was shared by Professor Halvorson and Professor Spiegelman. Lectures and laboratory in microbial genetics were given by Professor Spiegelman. Similarly, lectures and laboratory were introduced by Professor Gunsalus on the "Chemistry of Microbic Processes." After he left the department, responsibility for research and teaching in this area was assigned to Professor R. D. DeMoss in 1956. Work in the field of virology, originally introduced into the curriculum by Professor Luria, has been continued by Dr. J. W. Drake.

Research in the various fields of bacteriology was greatly expanded with the introduction of the new staff, resulting in an increased demand for space. With the completion of the new East Chemistry Building in 1950 and the move of the Biochemistry Department to this building, the Bacteriology Department was given additional space on the fourth floor of Noyes Laboratory. This new space was used for a teaching laboratory, offices, and research laboratories. The space on the third floor was devoted to offices and research laboratories.

Professor Borg left the department in 1954 and his place was taken by Dr. Ralph Wolfe. Dr. Wolfe taught the advanced bacteriology course and eventually assumed the duties attendant to the teaching of the nutrition and assay course. The latter had been revised and converted to a course in the nutrition and cultivation of micro-organisms. Other changes in department personnel involved the appointments of Dr. Elliot Juni (1953) to teach the advanced bacteriology course and his successor, Professor J. T. Wachsman (1957).

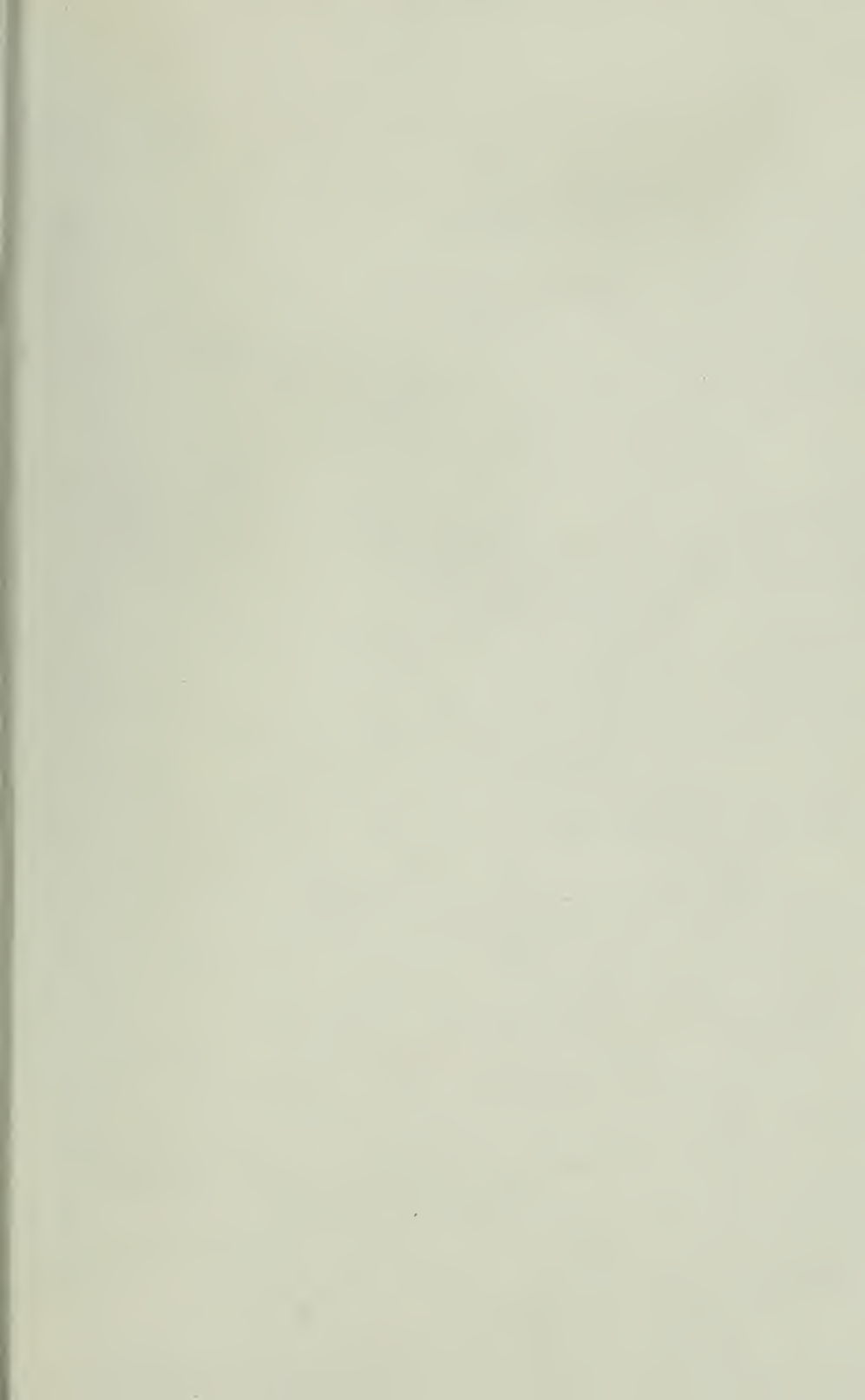
Despite the enlargement in quarters, sufficient classroom space was not available to accommodate all the courses listed in the department. After a request by Professor Halvorson for more space, the department was given laboratories on the second floor of the old Bevier Hall, now known as the English Building. All beginning laboratory classes were held in this space until new quarters in Burrill Hall were available.

Late in 1955 ground was broken at the corner of Illinois Street and Mathews Avenue for the erection of one wing of a new biology building. The cornerstone of the building was laid on March 31, 1958, and the building sufficiently complete to permit the department to begin moving during March, the second semester of 1958-59. The department now occupies space on the first, second, and third floors of this new building.

During the past year (1959) the courses in the department have been reorganized, and the name has been changed from Department of Bacteriology to the Department of Microbiology.

The present staff consists of nine full-time members and fourteen assistants. The members of the department with their fields of specialization are listed below:

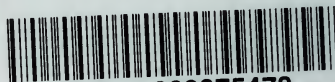
HALVORSON, H. O.	Professor and Head of Department	Spore Physiology and Food and Sanitation
ADAMS, JANE	Instructor	Virology
CLARK, F. M.	Professor	Food and Industrial Microbiology
DEMOSS, R. D.	Professor	Microbial Biochemistry and Physiology
DRAKE, J. W.	Assistant Professor	Virology
SPIEGELMAN, SOL	Professor	Microbial Genetics
WACHSMAN, J. T.	Assistant Professor	Microbial Biochemistry
WALLACE, G. I.	Professor	Medical Microbiology
WOLFE, R. S.	Associate Professor	Microbial Biochemistry and Physiology



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